WHAT IS CLAIMED IS:

1. A method for preventing hypotension in a mammalian patent whose blood is being withdrawn, treated in a blood treatment device of an extracorporeal blood circuit for removal of fluid, and infused into the patient, said method comprising the steps of:

a. monitoring oxygen concentration in blood flowing through the circuit, and

b. adjusting a flow rate of ultrafiltrate extracted from blood if the oxygen concentration in blood varies from a predetermined target value.

2. A method for preventing hypotension as in claim 1 wherein the oxygen concentration is a mixed venous oxygen saturation (SvO_2) level.

3. A method for preventing hypotension as in claim 1 wherein the oxygen concentration is a venous oxygen saturation (SvO_2) level of blood taken from a peripheral vein.

4. A method as in claim 1 where oxygen concentration is measured at a blood withdrawal tube of the extracorporeal circulation circuit between a patient connection and a blood pump

5. A method for preventing hypotension as in claim 2 wherein the target value is the sum of an oxygen concentration level determined during an initial phase of treating the blood in the circuit and a predetermined oxygen change value.

6. A method for preventing hypotension as in claim 5 wherein the predetermined change value is selected by an operator.

7. A method for preventing hypotension as in claim 5 wherein the predetermined change value is no greater than a seven percent difference than the determined initial oxygen saturation level.

8. A method for preventing hypotension as in claim 1 wherein the target value is preprogrammed in a controller for the circuit.

9. A method for preventing hypotension as in claim 1 wherein the oxygen concentration is determined using an optical biosensor.

10. A method for preventing hypotension as in claim 1 wherein the oxygen concentration is applied to estimate cardiac output and, in step b, reducing filtration if the estimated cardiac output falls a predetermined amount.

11. A method for preventing hypotension as in claim 1 wherein the oxygen concentration is relative to an initial oxygen concentration level.

12. A method for preventing hypotension as in claim 1 wherein the oxygen concentration is an oxygen concentration of blood in the circuit.

13. A method of controlling an extracorporeal blood circuit comprising the steps of:

a. withdrawing blood from a withdrawal blood vessel in a patient into the extracorporeal circuit;

b. filtering fluids from blood flowing through the circuit at a controlled filtration rate;

c. estimating a cardiac output level of the patient;

d. reducing the filtration flow rate if the measured cardiac output falls below a threshold level.

14. A method of controlling an extracorporeal blood circuit as in claim 13 wherein the cardiac output level is determined by monitoring oxygen level of the venous blood.

15. A method of controlling an extracorporeal blood circuit as in claim 13 wherein the blood circuit includes an oxygen saturation sensor having an emitter and a receiver mounted on opposite sides of a bloodline of said circuit.

16. A method of controlling an extracorporeal blood circuit as in claim 13 wherein the controlled filtration rate is reduced by temporarily stopping filtration.

17. A method of controlling an extracorporeal blood circuit as in claim 13 wherein the controlled filtration rate is reduced by slowing an ultrafiltration pump.

18. A method of controlling an extracorporeal blood circuit as in claim 13 wherein the controlled filtration rate is determined by cyclically starting and stopping the filtration of fluids in accordance with a duty cycle, and the filtration rate is reduced by reducing an OFF period of the duty cycle.

19. A system for treating blood from a patient comprising:

an extracorporeal circuit having a blood passage including a blood withdrawal tube, a filter and an infusion tube,

said filter having filter blood passage in fluid communication with the withdrawal tube, a blood outlet in fluid communication with the infusion tube, a filter membrane in fluid communication with the blood passage, a filter output section on a side of the membrane opposite to the blood passage, and a filtrate output line in fluid communication with the filter output section;

a biosensor coupled to said extracorporeal circuit and generating a feedback signal indicative of cardiac output of the patient;

a filtrate pump coupled to the filtrate output line and adapted to draw filtrate fluid from the filter at a controlled filtration rate, and

a filtrate pump controller regulating the controlled filtration rate based on the feedback signal, wherein the pump controller includes a processor and a memory storing a control algorithm to determine whether a feedback

signal threshold is exceeded by the feedback pressure signal, said controller reducing the controlled filtration if the feedback signal exceeds the feedback signal threshold.

20. A system as in claim 19 wherein the feedback signal is indicative of an oxygen level in the venous blood.

21. A system as in claim 19 wherein the feedback signal threshold is determined based on a sum of a feedback signal obtained during an initial phase of a treatment of the patient and a predetermined current feedback signal change.

22. A system as in claim 19 wherein the filter is a hemofilter.

23. A system as in claim 19 wherein the treatment device is a dialysis filter.

24. A system as in claim 19 wherein the treatment device is an ultrafiltration filter.